National Institute of Environmental Health Sciences

Using satellite images of environmental changes to predict infectious disease outbreaks

Author(s): Ford TE, Colwell RR, Rose JB, Morse SS, Rogers DJ, Yates TL
Year: 2009
Journal: Emerging Infectious Diseases. 15 (9): 1341-1346

Abstract:

Recent events clearly illustrate a continued vulnerability of large populations to infectious diseases, which is related to our changing human-constructed and natural environments. A single person with multidrug-resistant tuberculosis in 2007 provided a wake-up call to the United States and global public health infrastructure, as the health professionals and the public realized that today's ease of airline travel can potentially expose hundreds of persons to an untreatable disease associated with an infectious agent. Ease of travel, population increase, population displacement, pollution, agricultural activity, changing socioeconomic structures, and international conflicts worldwide have each contributed to infectious disease events. Today, however, nothing is larger in scale, has more potential for long-term effects, and is more uncertain than the effects of climate change on infectious disease outbreaks, epidemics, and pandemics. We discuss advances in our ability to predict these events and, in particular, the critical role that satellite imaging could p ay in mounting an effective response.

Source: http://dx.doi.org/10.3201/eid1509.081334

Resource Description

Early Warning System: ☑

resource focus on systems used to warn populations of high temperatures, extreme weather, or other elements of climate change to prevent harm to health

A focus of content

Exposure : ☑

weather or climate related pathway by which climate change affects health

Ecosystem Changes, Extreme Weather Event, Food/Water Quality, Human Conflict/Displacement, Human Conflict/Displacement, Precipitation, Sea Level Rise, Temperature

Extreme Weather Event: Flooding

Food/Water Quality: Other Water Quality Issue

Water Quality (other): Sea surface temperature; chlorophyll a concentration

Temperature: Fluctuations

☑

Geographic Feature: ☑

resource focuses on specific type of geography

General Geographical Feature

Geographic Location: ☑

resource focuses on specific location

Global or Unspecified

Health Impact: ☑

specification of health effect or disease related to climate change exposure

Infectious Disease, Morbidity/Mortality

Infectious Disease: Airborne Disease, Foodborne/Waterborne Disease, General Infectious Disease, Vectorborne Disease, Zoonotic Disease

Airborne Disease: Influenza, Meningitis

Foodborne/Waterborne Disease: Cholera, Cryptosporidiosis, E. coli, General Foodborne/Waterborne Disease, Leptospirosis, Salmonellosis, Vibrioses, Other Diarrheal Disease

Vectorborne Disease: General Vectorborne, Mosquito-borne Disease, Tick-borne Disease

Mosquito-borne Disease: Malaria

Tick-borne Disease: Tick-borne Encephalitis

Zoonotic Disease: General Zoonotic Disease, Hantavirus Pulmonary Syndrome

Medical Community Engagement: ☑

resource focus on how the medical community discusses or acts to address health impacts of climate change

A focus of content

Mitigation/Adaptation: ☑

mitigation or adaptation strategy is a focus of resource

Adaptation

Model/Methodology: ☑

type of model used or methodology development is a focus of resource

Exposure Change Prediction, Methodology

Resource Type: ☑

format or standard characteristic of resource

Research Article, Review

Timescale: ☑

time period studied

Time Scale Unspecified